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Transmittal

To: Ms. Patricia Simmons Pierre
Remedial Project Manager
USEPA
290 Broadway
New York, NY 10007-1866

Date: October 28, 2011
Project No.: 185281.0000.0000
Project: Dayco Corporation/LE
Carpenter Superfund Site

We have enclosed 3 copy(s) of:

- ☒ Replacement Pages – Preface, Table of Contents, Section 8, Appendix I – Project Schedule
- ☒ Response to September 15, 2011 USEPA Comments on the July 2011 Revised Addendum to the Remedial Action Work Plan for Source Reduction
- ☒ CD - Complete Report updated with October 2011 Replacement Pages

Description: Revised Addendum to the Remedial Action Work Plan

Rev: #2

Date: Original September 2009, Revised October 2011

Dear Patricia,

Please find attached 3 hard copies of the above-referenced Replacement Pages for the Revised Addendum to the Remedial Action Work Plan. In keeping with Region 2's Green Remediation policy, only replacement pages are provided. A complete copy of the revised report and report appendices has been included on a CD accompanying each replacement page set.

Copies of the final Response to September 15, 2011 USEPA Comments on the July 2011 Revised Addendum to the Remedial Action Work Plan for Source Reduction are also included.

Please feel free to contact me with any questions or comments.

Sent Via:

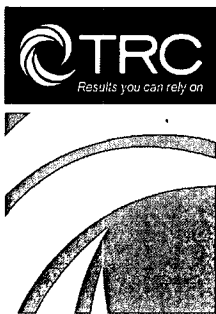
☐ Messenger ☐ 1st Class Mail ☒ Overnight Courier ☐ [Other]

Copy to: Clara Beitin, USEPA
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Ernie Schaub, LEC

Very truly yours,
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October 28, 2011

Ms. Patricia Simmons Pierre
Remedial Project Manager (RPM)
United States Environmental Protection Agency (USEPA)
Region 2
290 Broadway FL19
New York, NY 10007-1866

Subject: **Dayco Corporation/L. E. Carpenter Superfund Site**
USEPA ID No. NJD002168748
Response to September 15, 2011 USEPA Comments on the July 2011
Revised Addendum to the Remedial Action Work Plan for Source
Reduction

Dear Patricia:

TRC Environmental Corporation, (TRC) on behalf of L.E. Carpenter & Company (LEC), is submitting these Responses to Comments issued by United States Environmental Protection Agency (USEPA) on September 15, 2011 regarding the *Revised Addendum to the Remedial Action Workplan (RA Work Plan Addendum) for Source Reduction* (TRC, July 2011). The intent of this letter is to provide a written acknowledgement and/or a written response to the USEPA's general and specific comments and incorporates discussions and agreements from the October 24, 2011 conference call with USEPA and New Jersey Department of Environmental Protection (NJDEP) representatives.

GENERAL COMMENT

Most recent sampling results continue to suggest free product in the area that includes MW-31S, MW-32S and MW-35S. Please include a discussion on the plan to delineate and address the potential free phase product and dissolved contamination in this area.

Delineation of free product and associated impacted soil in the area around MW-31S, MW-32S and MW-35S (wetland area) will take place as described in Section 8.2 of the *Revised RA Work Plan Addendum* (TRC, July 2011). Upon completion of the remedial investigation effort, investigation results will be summarized and a plan for addressing residual free product and affected soil within the wetland area will be presented in a Final RA Work Plan Addendum. As needed to support the design of a final groundwater remedy in the MW-30

area, the extent of dissolved phase constituents of interest in groundwater will be refined and presented in a Final RA Work Plan Addendum.

SPECIFIC COMMENTS

1. Section 8.2

The section should define the intervals being sampled at each sampling location.

As outlined in Section 8.2, it is anticipated that a minimum of one soil sample per every 10-foot sonic core run will be used to screen the soils for the presence of non-aqueous phase liquid (NAPL). Samples within individual core runs will be specifically targeted for Oil-n-Soil™ screening when visual, olfactory, and PID readings suggest the presence of NAPL. Additionally, if a geologically significant change in lithology occurs within any one core run, supplemental screening samples will be collected.

It is anticipated that one confirmatory soil sample each, for both the contaminated zone and vertical “clean” zone, will be collected and submitted to the laboratory for benzene, toluene, ethyl benzene, xylenes (BTEX), bis 2-ethylhexylphthalate (DEHP), and grain size analyses.

2. Section 8.3.1

The language states that the deeper soil interval will be archived for subsequent analysis. It is not clear what factor(s) will determine whether or not a deeper sample will be analyzed for the COCs. Also, please provide information on the maximum amount of time a sample can be archived before being analyzed.

Each sediment sample will have two target sampling intervals collected at 0-0.5 feet and 0.5–2 feet below the bottom of the river and ditch. Shallow (0-0.5 feet) sediment samples will be analyzed for Site organic constituents of concern (COCs; BTEX and DEHP), grain size, and moisture. Given the 14-day hold time for sample extraction and 40-day hold for analysis, the deeper (0.5-2 feet) sediment samples will be extracted and archived for less than 40 days; analysis of deeper sediment samples will be dependent on BTEX and DEHP detections greater than sediment screening values shown in the table below in shallow sediment samples.

PARAMETER	ECOLOGICAL SCREENING VALUE (mg/kg)
Benzene	0.142
Toluene	0.175
Ethylbenzene	1.22
Xylenes	0.433
DEHP	0.182

3. **8.3.2 Pore Water Sampling**

Pore water samples will be collected at select sonic boring locations. It may be useful for our review to indicate where the pore water samples will be collected or provide information regarding the selection process.

Pore water samples adjacent to the Eastern Drainage Ditch will be collected immediately adjacent to the ditch bank on the LEC property near existing surface water sampling locations SW-D-2 and SW-D-4.

Pore water samples adjacent to the Rockaway River will be collected immediately adjacent to the river bank on the Wharton Enterprises and LEC properties near existing surface water sampling locations SW-R-1 through SW-R-4.

4. **8.3.4 Groundwater Organic COC Biodegradation Pilot Study**
Will bench scale studies results be submitted to EPA before proceeding with the field scale pilot study?

LEC and TRC will prepare a brief technical memorandum presenting results of the bench-scale studies and recommended modifications to the field-scale pilot, if any. The memo and a follow-up conference call will be scheduled to discuss recommendations and secure concurrence on any modifications to the field pilot as currently designed.

5. **9.9.2 Soil Excavation and Screening Process**

This section states that "Clean material excavated from the sloped portion of the excavation will be stockpiled for later use as backfill." How will it be verified that this soil is clean?

This section also states that "Due to the proposed excavation extending to the water table, no samples from the excavation bottom

will be collected as part of the remediation.” Why should this prevent post-ex samples from being collected at depth?

Modifications to Section 9 that were included in the Revised RA Work Plan Addendum (TRC, July 2011) reflect responses to general and specific comments regarding the MW19/HS-1 area scope of work were approved by USEPA on December 30, 2009.

Implementation of the MW19/HS-1 area remediation began on January 11, 2010 and was completed in mid-April 2010. Documentation of the MW-19/HS-1 remediation activities were presented in an Addendum to the Remedial Action Report (RAR Addendum), submitted on July 19, 2010. The RAR Addendum was approved by USEPA on July 12, 2011.

6. ***Appendix E***

One of our previous comments indicated that it would be useful to evaluate data to determine if there have been any possible impacts to the wetland area outside of the Potential Remaining Source Area of Concern. It is noted in Appendix E of the document that proposed investigation locations TG-10, TG-13, TG-14, and TG-15 were located as a means of delineating the easternmost extent of the contaminants of concern. These designations were not located on any of the figures.

We apologize for any confusion on Figure 15 with respect to sample designations. The “TG-“ designations used on the original version of Figure 15, reflected use of a Tar-Gost® screening methodology. With modification of the soil collection and screening methodology, these designations were modified to “SB-“ in the revised RA Work Plan Addendum. The TG sample locations referenced above were modified as follows on the revised Figure 15.

- TG-10 is now SB-3
- TG-13 is now SB-5
- TG-14 is now SB-7
- TG-15 is now SB-9

It is also noted in Appendix E that additional step-out borings may be installed as dictated by real-time data collected in the field. The procedure for determining whether or not step-out borings are needed should be described in the document.

As described in Section 8.2, establishing lateral clean zones will be completed by installing boring locations on 30-40 foot centers as shown on Figure 15. Soil borings for NAPL assessment have been placed within and on the boundaries of the anticipated extent of free product, projected from historical groundwater monitoring data.

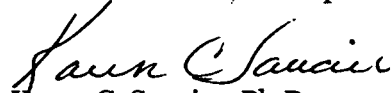
The "step-out" approach will be employed primarily at soil borings placed at the projected free product boundary to support lateral definition of the remaining impacted area. If field screening data, using the Oil-N-Soil™ kits defined in Section 8.2 indicate that product exists, then a step-out boring will be placed approximately ten feet from the impacted boring. "Step-out" borings will continue until free product is no longer observed in the soil boring using the Oil-N-Soil™ screening methodology.

Upon review and approval of the provided clarifications on the MW-30 area scope of work, we can provide a revised Section 8 and a revised project schedule (Appendix I). Hard copy versions of Section 8 of the revised RA Work Plan Addendum text, in addition to an electronic copy of the fully revised work plan, will be submitted to USEPA following approval of these responses to comments.

Please feel free to contact me with any questions or comments.

Sincerely,

TRC Environmental Corporation



Karen C. Saucier, Ph.D.
Project Coordinator

Attachments

cc: Robert Alvey, USEPA
Tracy Grabiak, George Blyskun, Gwen Zervas; NJDEP
Ernie Schaub, L.E. Carpenter
Barry Culp, Jim Dexter, Scott Pawlukiewicz; TRC
Central Files

**Addendum to the Remedial Action Work
Plan for Source Reduction**

Dayco Corporation/L.E. Carpenter Superfund Site
USEPA ID NJD002168748

**September 2009, Revised July 2011,
Revised October 2011**

Preface

The original Remedial Action Work Plan (RAWP) Addendum (RMT, 2009) was submitted to United States Environmental Protection Agency (USEPA) on September 3, 2009. Consistent with the 2009 Unilateral Administrative Order (UAO), and Statement of Work (SOW), the RAWP Addendum addressed three remaining on-site Areas of Concern (AOCs) outlined in the SOW, namely:

- MW19/Hot Spot 1 area (MW19HS1)
- MW-30 area
- Shallow groundwater

Status of the individual AOCs are as follows

MW19/Hot Spot 1 Area

In an effort to expedite activities in the MW19HS1 area, the MW19HS1-specific aspects of this revised RAWP Addendum were conditionally approved by USEPA on December 21, 2009. Implementation of the MW19/HS-1 area remediation began on January 11, 2010 and was completed in mid-April 2010. Documentation of the MW19HS1 remediation activities were presented in an Addendum to the Remedial Action Report (RAR Addendum), submitted on July 19, 2010, along with a proposed post remedial monitoring plan (PRMP) which included supplemental monitoring well installation, soil gas sampling, and groundwater quality analysis for the area. Post remedial monitoring as proposed is being implemented. The RAR Addendum and PRMP are under review by USEPA.

MW30 Area

Activities to further evaluate the potential for residual source areas in the wetland area and a pilot test to evaluate polishing-remediation of dissolved bis 2-ethylhexylphthalate (DEHP) was presented in the RAWP Addendum (RMT, 2009). USEPA provided comments on the RAWP Addendum in an email dated December 21, 2009. Responses to the MW-30 area specific comments were submitted to the USEPA on February 1, 2010 and approved by USEPA in their email dated February 22, 2010. This revised RAWP Addendum incorporates agency review comments for the MW-30 area.

Shallow Groundwater

Quarterly groundwater and surface water monitoring consistent with the revised RAWP Addendum is being implemented for the Site. Current shallow groundwater quality data are summarized in quarterly monitoring reports prepared for the site.

Addendum Updates

Given that data collection and remediation activities outlined in this RAWP Addendum for the MW19HS1 area and shallow groundwater has been completed and documented elsewhere, certain sections of this workplan have been not been modified from the original September 2009 submittal. Only those sections requiring updates to reflect resolution of responses to agency comments and UAO compliance activities have been modified, as follows:

Document Section	Note
TRC Signature Page	New
Preface	New
Table of Contents	Updated
Section 1 – Introduction	Updated
Section 2 – Regulatory Oversight and Compliance	Updated
Section 3 – AOCs, COCs, and Performance Standards	Unchanged from Original
Section 4 – AOC Specific Regulatory Compliance and Path Forward Strategy	Unchanged from Original
Section 5 – AOC Investigative and Remedial Background	Unchanged from Original
Section 6 – Site Characteristics	Unchanged from Original
Section 7 – AOC Current Conditions	Unchanged from Original
Section 8 – MW-30 Remedial Investigation	Modified to reflect <ul style="list-style-type: none">• resolution of Agency review comments• clarification of sediment sampling intervals• inclusion of an MW-30 bench-scale study
Section 8 – MW-30 Remedial Investigation	Modified to reflect resolution of Agency review comments issued on September 15, 2011
Section 9 – MW19HS1 Soil Remediation	Modified to reflect <ul style="list-style-type: none">• resolution of Agency review comments
Section 10 – Cost and Schedule	Unchanged from Original
Section 11 – Community Relations	Unchanged from Original
Tables	Updated
Figures	Update Figure 15 only
Appendix A – UAO and SOW	Unchanged from Original
Appendix B – USEPA Lead Agency Correspondence	Unchanged from Original
Appendix C – AOC Regulatory Review Correspondence	Unchanged from Original
Appendix D – MW-30 RIW Response to Comments	Unchanged from Original
Appendix E – RAWP, RAR, and ESD Regulatory Correspondence	Updated with RAWP Response to Comments
Appendix F – Site Boring Logs	Unchanged from Original
Appendix G – Wetland, Floodplain and Floodway Permitting Information	Updated with a copy of FLUR permit
Appendix H – SAP/QAPP, CQAPP, and HASP	Unchanged from Original
Appendix I – Project Schedule	Updated Schedule for MW-30 only
Appendix J – Costs	Unchanged from Original

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Appendix I	Project Schedule
Appendix J	Costs

Section 8

MW-30 Area Remedial Investigation

8.1 General

Data collection objectives for this AOC are to:

- Further characterize and delineate dissolved-phase organic COCs in groundwater in the MW-30 Area;
- Identify potential residual source area(s) of organic COCs that could result in discharges to the drainage ditch or the Rockaway River;
- Determine whether Site related contaminants from the remaining residual source area(s), if any, are impacting the wetland – both within and/or outside the Potential Remaining Source Area of Concern as outlined on Figure 15; and
- Characterize the rate and cause of concentration declines observed in most of the wells on the Site.

These data collection objectives are based on:

- Historical investigations as summarized in this addendum.
- Previously implemented remedial actions.
- Existing Site conditions as summarized this addendum.
- The potential remaining source AOCs as described in this addendum.

Activities needed to fill these data gaps are outlined on Table 8 and described in the following areas of concern. The Sampling and Analysis Plan (SAP), Quality Assurance Project Plan (QAPP), Construction Quality Assurance Project Plan (CQAPP), and Health and Safety Plan that will control work conducted as part of this addendum are included in Appendix H.

8.2 Remaining Residual Sources Investigation

The data collection objective for the remaining potential source area is to determine the extent of LNAPL in residual or free phase so as to determine the extent and magnitude of a potential remediation system needed to prevent the potential for COCs to discharge to the drainage ditch or river at concentrations above background concentrations as described in Section 3.2 (*i.e.*, non-detect standard for Site surface waters based on the data presented in Table 4 for SW-R-5 and SW-R-6).

A drilling rig utilizing the dual-tube Sonic drilling technology is proposed to complete the MW-30 area remedial investigation. The sonic method eliminates the potential penetration

issues associated with probable large boulder trains within subsurface outwash gravels. Use of the dual-tube sonic drilling technology provides a means of obtaining continuous soil samples that can be used to conduct in-field testing (with PID and Oil-N-Soil kits), prevent sloughing/cross-contamination, and provide sufficient soil quantity to collect/submit soil samples to the laboratory. The cores collected from each location shown on Figure 15 will be conventionally logged and sampled to determine the vertical distribution and nature of any residual LNAPL that is present. Oil-N-Soil test kits will be used in the field, at regularly-spaced intervals, to evaluate the nature of residual NAPL (see QAPP) in real time. The Oil-n-Soil® kits were approved by both USEPA and NJDEP and used successfully during the December 2004 pre-construction boring program to delineate vertical extent of free product. Examples of Oil-N-Soil outputs are provided in the QAPP and in the February 1, 2010 *Response #2 to the December 21, 2009 USEPA Comments on the September 2009 Addendum to the Remedial Action Work Plan for Source Reduction* found in Appendix E.

It is anticipated that one confirmatory soil sample each, for both the contaminated zone and vertical “clean” zone, will be collected and submitted to the laboratory for BTEX, DEHP, and grain size analyses. It is anticipated that a minimum of one soil sample per every 10-foot sonic core run will be used to screen the soils for the presence of LNAPL. Samples within individual core runs will be specifically targeted for Oil-n-Soil™ screening when visual, olfactory, and PID readings suggest the presence of NAPL. Additionally, if a geologically significant change in lithology occurs within any one core run, supplemental screening samples will be collected. Establishing lateral clean zones will be completed by installing boring locations on 30-40 foot centers as located on the attached Figure 15, together with confirmatory laboratory analyses as described above. Soil borings for NAPL assessment have been placed within and on the boundaries of the anticipated extent of free product, projected from historical groundwater monitoring data. Note that the “Potential Remaining Source Area of Concern” shown in yellow on Figure 15 is based on data from the existing PRMP monitoring wells, as well as groundwater flow directions.

The “step-out” approach will be employed primarily at soil borings placed at the projected free product boundary to support lateral definition of the remaining impacted area. If field screening data using the Oil-N-Soil™ kits defined above indicate that product exists, then a step-out boring will be placed approximately ten feet from the impacted boring. “Step-out” borings will continue until free product is no longer observed in the soil boring using the Oil-N-Soil™ screening methodology. For example, if field data indicate that product exists at SB-3, then a step-out boring will be placed approximately ten feet east.

Two representative soil samples from each permeable soil unit (anticipated to be 4 samples) will also be submitted for total chromium and total organic carbon analyses. Field sampling

methods and the laboratory analytical methods for the soil BTEX and DEHP analyses are described in the QAPP.

8.3 Groundwater Sampling, Sediment Sampling, and Characterization

Groundwater sampling events will continue on a quarterly basis in all of the previously installed PRMP monitoring wells. In addition, a round of sediment and pore water samples will be collected, and an enhanced biodegradation pilot study will be conducted to assess the potential viability of the use of biodegradation methods to achieve remedial action objectives.

8.3.1 Sediment Sampling

The baseline sediment sampling event, proposed in response to USEPA's comment outlined in the January 22, 2009 letter regarding Section 4.5 of the MW-30 RIW (Ref. Appendices C and D), will include a "targeted" sampling approach with sample locations coinciding with the existing surface water sampling locations in the Washington Pond, Rockaway River, and the drainage ditch (Table 8). Sediment sampling procedures will consist of:

- **Sampling Locations-** Sediment samples will be collected at or near each of the current surface water locations (12 total) plus one (1) duplicate location (Figure 2).
- **Sampling Procedures-** A sample of the drainage ditch/river sediment will be collected using a variety of methods and equipment depending on the conditions encountered. Specifically, Site conditions include the preponderance of large cobbles and gravel, which are neither conducive nor appropriate for sediment testing purposes. Sediment samples will either be collected directly using a hand held device such as a shovel, trowel, or auger; or using a device such as a hand corer device. Each sediment sample will have two target sampling intervals collected at 0–0.5 feet and 0.5–2 feet below the bottom of the river and ditch. Sediment will be transferred from the sampling device to the appropriate sample container(s) for laboratory analysis or field homogenization. Field homogenization will be performed only if necessary to get the appropriate volume of fine-grained sample required by the laboratory by combining multiple grab samples, mixing to create a uniform sample, and transferring to the appropriate laboratory container(s).
- **Field Measurements and Observations-** Field parameters of the overlying water (temperature, pH, DO, and conductivity) will be collected as part of the sediment sampling as well as sediment sample characteristics (water depth, soil penetration depth, any problems while sampling, percent recovery, description based on feel, etc.).
- **Laboratory Analysis-** Each sediment sample will have two target sampling intervals collected at 0–0.5 feet and 0.5–2 feet below the bottom of the river and ditch. Shallow (0–0.5 feet) sediment samples will be analyzed for Site organic constituents of concern (COCs; BTEX and DEHP), grain size, and moisture. Given the 14-day hold time for sample extraction and 40-day hold for analysis, the deeper (0.5–2 feet) sediment samples will be extracted and archived for less than 40 days;

analysis of deeper sediment samples will be dependent on BTEX and DEHP detections greater than sediment screening values shown in the table below in shallow sediment samples.

PARAMETER	ECOLOGICAL SCREENING VALUE (mg/kg)
Benzene	0.142
Toluene	0.175
Ethylbenzene	1.22
Xylenes	0.433
DEHP	0.182

8.3.2 Pore Water Sampling

Pore-water samples will be collected via stainless steel well points driven approximately 2 feet into the stream sediments at select sonic boring locations nearest to the surface water bodies and at the stream sediment sampling locations.

- Pore water samples adjacent to the Eastern Drainage Ditch will be collected immediately adjacent to the ditch bank on the LEC property near existing surface water sampling locations SW-D-2 and SW-D-4.
- Pore water samples adjacent to the Rockaway River will be collected immediately adjacent to the river bank on the Wharton Enterprises and LEC properties near existing surface water sampling locations SW-R-1 through SW-R-4.

Pore water samples will be analyzed for Site organic COCs (BTEX and DEHP). These data will be evaluated along with data generated from the proposed stream sediment sampling activities to provide an adequate evaluation of the GSI transition zone.

8.3.3 Hydraulic Conductivity Testing

Hydraulic conductivity tests will be conducted on each of the wells located generally downgradient of the source removal area to help in evaluation of remedial action alternatives. These data would be used to help determine the groundwater flow velocity, flux of COCs and potentially in conceptual design and costing of each alternative.

The hydraulic conductivity test will be conducted using the slug test method. At locations with an adjacent well, a mini-TROLL pressure transducer will be installed to monitor water levels on a short interval basis during the slug test. The slug test will be conducted using a 2 to 5-foot long slug using the following methods:

- After measuring initial water levels and well depths, the length of the transducer and slug depth will be measured and marked.
- A mini-TROLL pressure/temperature sensor will be placed in the well to 8 feet below the water level or, if the water column is less than 8 feet from the well bottom, 0.5 feet above the bottom of the well.

- The data logger will be set to record on a 0.2 second interval beginning after a 5 minute equilibrium time.
- After the transducer equilibrium time, the slug will then be quickly lowered down the well approximately 5 feet into the water column or 1 foot from the well bottom, whichever is less, and the water level will be allowed to equilibrate. Once the water has equilibrated, the slug will be rapidly removed and the transducer will again record the water level as the level returns to the original depth. Temperature and pressure data will be recorded using a mini-TROLL internal data logger to determine the head change during both the insertion and withdrawal of the slug. At wells that show relatively quick recharge, the slug test will be repeated twice to determine reproducibility.

An appropriate set of methods will be used to estimate hydraulic conductivity values, probably using the Bouwer and Rice and/or Hvorslev methods available in the Aquifer Test Pro 3.5 computer program. Data will be entered into the program to first create drawdown graphs. From the drawdown graphs, a default slope line used to calculate conductivity will be plotted using all of the collected data points. The slope line will then be modified to represent the straight-line portion of the drawdown data.

8.3.4 Groundwater Organic COC Biodegradation Pilot Study

A biodegradation pilot study will be conducted to allow for assessment of the potential viability of the use of active (*e.g.*, bio-augmentation) and passive (*e.g.*, natural attenuation) methods to achieve remedial action objectives. The currently available data is inadequate to determine whether biodegradation of the DEHP is a viable option to be considered for either the short term or the long term and under MNA or enhanced biodegradation methods.

The biodegradation pilot studies will be conducted as a bench-scale and field-scale pilot, if warranted. Initial bench scale testing will consist of fixed column studies to evaluate introduction of air, ozone, and nutrients mixtures on the reduction of organic COC concentrations. Undisturbed core samples for fixed column evaluations will be collected from a localized potential residual source area during the MW-30 RI field efforts. Following establishment of control and treatment columns, samples will be collected at 0, 15, 30, and 45 day intervals and submitted for analysis of DEHP, BTEX, and heterotrophic plate counts. Results of the bench-scale evaluations will be used to determine the need for and scope of the field scale pilot study. LEC and TRC will prepare a brief technical memorandum presenting results of the bench-scale studies and recommended modifications to the field-scale pilot, if any. The memo and a follow-up conference call will be scheduled to discuss recommendations and secure concurrence on any modifications to the field pilot as currently designed.

The field scale Pilot Study, if indicated, will consist of installation of 3 air sparge wells in a tight cluster, installation of 3 observation wells, and operation/monitoring of the air sparge and observation wells for a period of 3 months. The air sparge wells will be installed in a triangular pattern spaced 25 ft apart to a depth below the observed COCs in excess of the groundwater standard based on surrounding monitoring well nests. This depth is approximately 15 ft below ground based on data from the MW-30 well cluster where MW-30i is typically below detection limits for DEHP and total Xylenes.

The pilot study is proposed to be conducted in an area where there is sufficient thickness of saturated, permeable soils to operate an air sparge pilot study (*e.g.*, at least 3 ft). The location is shown on Figure 15 to be adjacent to MW30s. However, a suitable location will be based on a combination of the existing data and results of the soil investigation described above in Section 8.2.

One observation well will be installed in the center of the triangle and the other two wells will be spaced 20 ft and 35 ft, respectively, downgradient of the center of the air sparge wells. The well in the center of the air sparge well cluster is intended to see rapid and intense response from the air sparge wells and will be used early in the pilot study to determine if aeration of the groundwater results in enhancing biodegradation. The downgradient observation wells will be used early in the pilot study to assess the radius of influence of the air sparge system. Wells will be screened across the water table, typically at a depth of approximately 5 ft.

The pilot study will initially be run without addition of nutrients or supplemental bacteria, to determine if aeration alone will promote biodegradation. Given that the groundwater has been in contact with DEHP for several years, it is anticipated that there has been sufficient time and opportunity for an acclimated bacterial population to have been established, although they may not have flourished because of the lack of adequate dissolved oxygen. Based on monitoring results of the pilot study, addition of nutrients (phosphorous and nitrogen) may be necessary as a small quantity of liquid fertilizer or the addition of specialized bacteria available from specialty bacteria supply firms. These decisions will be made after receiving results of monitoring after a period of 1.5 months.

Monitoring will consist of the following:

- Air sparge wells: Air injection rates and pressures on a continuous logging device. Groundwater samples will be collected from the air sparge wells if no biodegradation is detected at the observation wells. Analysis would be for BTEX, DEHP, and the MNA parameters from routine program.
- Observation wells monitoring groundwater quality will be analyzed as follows:

- Field parameters – DO, pH, ORP, conductivity, turbidity, temperature, ferrous iron, alkalinity, and carbon dioxide.
- Laboratory parameters – BTEX, and DEHP, heterotrophic plate count, TSS, TDS, nitrate nitrogen, ammonia nitrogen, total phosphorus, sulfate, and methane.
- Frequency – twice prior to startup, weekly for 4 weeks upon startup, every other week after 4 weeks.
- Sampling methods – low flow sampling using the same methods as the routine monitoring program.
- Sample depth – at the water table.

8.4 Survey

Each monitoring point discussed in this section will be surveyed by a New Jersey-licensed surveyor. A permanent water level mark will be etched into the top of the inner well casing and surveyed to the nearest hundredth of a foot in relation to the permanent on-site datum. Each sample location will be surveyed horizontally to an accuracy of one-tenth of a second latitude and longitude. Surveyed sample locations will be reported in both State Plane and Lat/Long systems.

8.5 Wetland Restoration

A Wetland Restoration Plan for temporary wetland impacts was prepared and submitted with the initial Freshwater Wetlands Statewide General Permit No. 4 application package (Appendix G). LEC was granted authorization for permit number 1439-04-0001.1 (FWW 040001) by the New Jersey Department of Environmental Protection (NJDEP) Land Use Regulation Program (LURP) on February 25, 2005 (Appendix G). This authorization permitted the disturbance of ± 0.42 acre of freshwater wetlands and/or State open waters and ± 0.19 acre of wetland transition area.

The full extent of wetland impacts resulting from remediation of the MW-30 area is currently unknown, but will be determined during delineation efforts. As outlined in RMT's February 4, 2005 Response to Deficiency Letter (Appendix G), all wetland and transition zone impact areas will be restored to pre-remedial elevations and vegetation communities. All impact areas will be restored to an equal or higher quality vegetation community as specified in the response letter.

Temporary restoration using the wetland seed mix specified in the February 4, 2005 letter will be conducted following completion of the work outlined herein. Final restoration of the entire wetland area per the above referenced permit will not be completed until all wetland area

investigations and remedial activities are complete and the area is in final MNA groundwater monitoring.

8.6 Supplemental Remedial Design Report

The results of this investigation, along with a proposed soil remedy in compliance with the 1994 ROD will be presented in the Final RA Work Plan Addendum (Ref. Section 2.4.2.)

Appendix I

Project Schedule

MW-30 Area Remedial Investigation Implementation Schedule
Dayco/L.E. Carpenter and Company Superfund Site
Wharton, New Jersey

